Amendments to the Specification

Please replace ~~ce~~ the three paragraphs starting on page 1, line 20 and ending at page 3, line 9 with the following amended paragraphs:

For simplicity, as used in this specification and claims that follow, an "acoustically reflective" element includes any element which at least partially reflects acoustic wave energy, even if such element may actually pass through nearly all of the wave energy. For example, depending on the size of the touch-sensitive area, the number of elements used in the reflective array, the energy of the acoustic signal and/or other factors, it may be possible that an individual reflective array element reflects as little as 1% or less of an acoustic wave into the touch-sensitive area, while passing through the remaining wave energy to the next successive array element.

Returning to FIG. 1, the spacing of the reflective array elements 4 is variable to compensate for the attenuation of the acoustic waves with increasing distance from first transmitter 3a. Alternately, such compensation may be provided by densely spaced reflective array elements with variable ~~in~~ reflective strengths. Upon reaching the lower edge of touchscreen 1, the acoustic waves 5a, 5b, and 5c are again reflected by approximately 90 degrees (shown by arrow 11b) by a second linear array 13 of acoustically reflective elements 4 towards a first receiving transducer 6a, where they are detected and converted to electrical signals for data processing. Along the left and right edges of touchscreen 1 are located a similar arrangement. A second transmitting transducer 3b generates an acoustic wave 12a along the left edge, and a third linear array 13 of acoustically reflective elements 4 creates therefrom ~~there from~~ a plurality of acoustic waves (exemplary 7a, 7b, and 7c) traveling horizontally (parallel to the X-axis) across touch-sensitive area 2. Acoustic waves 7a, 7b, and 7c are redirected (arrow 12b) by a fourth linear array 13 of acoustically reflective elements 4 towards receiving transducer 6b, where they are detected and converted to electrical signals.

If the touch-sensitive area 2 is touched at position 8 by an object such as a finger or a stylus, some of the energy of the acoustic waves 5b and 7a is absorbed by the touching object. The resulting attenuation is detected by receiving transducers 6a and 6b as a perturbation in the acoustic signal. A time delay analysis of the data with the aid of a microprocessor (not shown) allows determination of the coordinates of position 8. Those skilled in the art will appreciate that it is not essential to have two sets of transmitting/receiving transducers to make a touchscreen. The device of FIG. 1, without one set of transducers, will still function as a touchscreen, detecting the occurrence of a touch and providing limited location information (i.e., one of the coordinates). Or, a touchscreen can be designed with only two

transducers by using a common transmit/receive transducer scheme as shown in Fig. 11 of U.S. Patent ~~US patent~~ 4,880,665.

Please replace the paragraph beginning at page 5, line 19 by the following amended paragraph:

In an exemplary embodiment, a touchscreen includes a substrate capable of propagating acoustic waves and having a touch-sensitive area. A linear array of focusing-shaped acoustically reflective elements is ~~are~~ provided lying in or on the substrate and positioned to transmit or receive acoustic signals into or out of the touch-sensitive area. By way of example, the reflective elements may have a varying width dimension, with a maximum width proximate their center. By way of another example, the reflective elements may have a varying height dimension, with a maximum height proximate their center.

Please replace the paragraph beginning on page 6, line 5 by the following amended paragraph:

In one embodiment, the reflective elements are grooves located in a surface of the substrate and positioned at an angle relative to an array axis, each element having a ~~having a~~ varying depth from the substrate surface, with a maximum depth proximate its center. The groves may be at least partially filled with a medium having a different (i.e., slower) acoustic wave propagation speed than the substrate medium.

Please replace the paragraph beginning at page 8, line 6 by the following amended paragraph:

FIG. 4 illustrates a transducer 22 and a linear reflective array 24 for use in transmitting an acoustic beam 34 emitted from the transducer 22 across a touch-sensitive area (not shown) of an acoustic[[-]] touchscreen (e.g., glass) substrate 25. The reflective array 24 includes a plurality of acoustically reflective focusing-shaped elements 26. In particular, the reflective elements 26 are lens-shaped, [[;]] i.e., having a parabolic profile, and are positioned at an angle (approximately 45 degrees) relative to an axis 28 of the reflective array 24. Each reflective element 26 has a proximal facing convex surface 30 and a distal facing convex surface 32, the respective surfaces 30 and 32 tapering to respective transverse ends 39 and 40 of the element 26. FIGS. 5A and 5B are plan and side views of the array elements 26 shown in FIG. 4, which are formed on a surface of the substrate 25.

Please replace the paragraph beginning at page 10, line 14 by the following amended paragraph:

In certain embodiments, typically but not necessarily used in conjunction with Rayleigh waves (a term which, as used herein, subsumes quasi-Rayleigh waves), and for which the disclosed embodiments of the invention are applicable, the transmitting transducer 22 can be a focusing transducer, in which the beam 34 of acoustic waves <u>comes</u> ~~come~~ to a focus at a focal location 38 proximate the center of the proximal surface 30 of the most proximal element 26. Because the wave energy in beam 34 is not precise, the focal location 38 is not a mathematical spot, but rather a "neck" in the width of the beam 34. If the respective reflective array elements 26 were not in the path of the acoustic beam 34, it would diverge after the focal neck 38. A receiving transducer (not shown) may also be a focusing type, with similar advantages. As will be apparent to those skilled in the art, the foregoing teaching regarding the use of a focusing transducer will be applicable to further embodiments of the invention, both illustrated and not illustrated herein. For purposes of brevity, however, it will not be specifically discussed in each instance.

Please replace the paragraph beginning at page 12, line 11 by the following amended paragraph:

While the focusing-shaped reflective elements 26, 46, 66 and 86 have been illustrated and described as formed on a surface of the touchscreen substrate 25, it may be desirable to form one or more of the reflective elements of an array partially or completely embedded in the touchscreen substrate, depending on the acoustic waves employed in the particular embodiment and/or other design considerations. For example, acoustic touchscreens may employ waves other than Rayleigh waves, such as shear and Lamb waves, or combinations of different types <u>of</u> acoustic waves (including combinations involving Rayleigh waves). Shear waves (e.g., ZOHPS and HOHPS) and Lamb waves have significant acoustic power density at both the top and bottom surfaces of the substrate in which they travel. Also, the particular focusing-shaped reflective elements in a particular array and/or touchscreen may be formed differently, e.g., with some located on a surface, and others partially or fully embedded in the touchscreen substrate.

Please replace the paragraph beginning at page 13, line 18 by the following amended paragraph:

FIGS. 10A, 10B and 10C illustrate still further focusing-shaped elements 146, 156 and 166, respectively, which may be used in reflective array 24 of FIG. 4. In particular,

elements 146, 156 and 166 are grooves formed in a surface of the substrate 25, each having a varying depth dimension relative to the surface of the substrate 25. Elements 146 and 166 each have a half-parabolic side profile, and element 156 has a triangular side profile. More particularly, with reference to FIG. 10A, element 146 has a parabolic bottom surface 142, with a maximum depth relative to the surface of the substrate 25 proximate its center. With reference to FIG. 10B, element 156 has a pair of flat bottom surfaces 152 and 154, which extend from the substrate 25 to meet at a maximum depth proximate the center of the element 156. With reference to FIG. 10C, element 166 has a parabolic bottom surface 164, with a maximum depth relative to the surface of the substrate 25 proximate its center. Element 166 is similar to element 146, except that element 146 is empty, whereas element 166 is substantially filled with a medium 168 different (i.e., and having a slower wave propagation speed) than the substrate medium. Examples of such mediums include glass and/or silver-loaded glass frit, as well as polymer inks, such as those disclosed in U.S. Patents ~~US Patent~~ Nos. 5,648,643 and 5,883,457, which are fully incorporated herein by reference. Any of elements 146, 156 and/or 166 may optionally also have a varying width dimension. As with the previously described focusing-shaped reflective array elements, the resultant phase delay profile of the portion of an acoustic wave passing through elements 146, 156 and 166 will be focused within an area proximate the center line 36 of the array axis 28.